Amended set of claims for further prosecution
(clean copy)

We claim:

1. A composite comprising

Aa) at least one first layer which comprises a mixture Ia, comprising a mix IIa consisting of

a) from 1 to 95 % by weight of a solid III, preferably a basic solid III, having a primary particle size of from 5 nm to 20 µm and

b) from 5 to 99 % by weight of a polymeric composition IV obtainable by polymerization of

b1) from 5 to 100 % by weight, based on the composition IV, of a condensation product V of

α) at least one compound VI which is able to condense with a carboxylic acid or a sulfonic acid as defined in β or a derivative or a mixture of two or more thereof, and

β) at least 1 mol per mol of the compound VI of a carboxylic acid or sulfonic acid VII which contains

at least one free-radically polymerizable functional group, or a derivative thereof or a mixture of two or ore thereof,

and

b2) from 0 to 95 % by weight, based on the composition IV, of a further compound VIII having a mean molecular weight (number average) of at least 5000 and polyether segments in the main chain or a side chain,

where the proportion by weight of the mix IIa in the mixture Ia is from 1 to 100 % by weight,

and the layer is free of an electron-conducting, electrochemically active compound,

and

B) at least one second layer which comprises a polymeric binder and an electron-conducting, electrochemically active compound,

wherein the first layer or layers and the second layer or layers are joined to one another by one of the two methods V1 or V2:

V1) Lamination of the first layer or layers with the second layer or layers under the action of heat or under the action of heat and pressure, or

V2) Corona treatment of the first layer or layers, the second layer or layers or the first layer or layers and the second layer or layers and

subsequent bringing together of the corona-treated first layer or layers with the corona-treated second layer or layers.

2. A composite comprising

Ab) at least one first layer which comprises a mixture Ib comprising a mix IIb consisting of

a) from 1 to 95 % by weight of a solid III, preferably a basic solid, having a primary particle size of from 5 nm to 20 µm and

b) from 5 to 99 % by weight of a polymer IX obtainable by polymerization of

b1) from 5 to 75 % by weight, based on the polymer IX, of a free-radically polymerizable compound X selected from the group consisting of
olefinic hydrocarbons, (meth)acrylonitrile, halogens containing olefinic compounds, vinyl alcohol, vinyl acetate, N-vinylpyrrolidone, N-vinylimidazole, vinyl formamide, phosphonitrilic chlorides and derivatives thereof which are partly or completely substituted by alkoxy, phenoxy, amino and fluoroalkoxy groups, aromatic olefinic compounds and vinyl ethers, and which is different from the carboxylic acid or the sulfonic acid VII or a derivative thereof, or a mixture of two or more thereof,

and

b2) from 25 to 95 % by weight, based on the polymer IX, of a further compound VIII having a mean molecular weight (number average) of at least 5000 and polyether segments in the main chain or a side chain,

where the proportion by weight of the mix Ib is from 1 to 100 % by weight

and the layer is free of an electron-conducting, electrochemically active compound,

and

B) at least one second layer which comprises an electron-conducting, electrochemically active compound,

wherein the first layer or layers and the second layer or layers are joined to one another by one of the two methods V1 or V2:

V1) Lamination of the first layer or layers with the second layer or layers under the action of heat or under the action of heat and pressure, or

V2) Corona treatment of the first layer or layers, the second layer or layers or the first layer or layers and the second layer or layers and subsequent bringing together of the corona-treated first layer or layers with the corona-treated or untreated second layer or layers.

3. A composite comprising

at least one first layer Aa or at least one first layer Ab or at least one first layer Aa and at least one first layer Ab,

at least one second layer B,
each as defined in claim 1 or 2, and

C) at least one bonding layer.

4. A composite as claimed in claim 3, wherein the bonding layer or layers C has/have a melting point which is lower than the melting point of the first layer or layers or the second layer or layers or the first and second layer or layers.

5. A composite as claimed in claim 3 or 4, wherein the bonding layer or layers C is/are a polyethylene oxide, a polyvinyl ether, a polyacrylate, a polymethacrylate, polyvinylpyrrolidone, a polyurethane, a wax-like (co)polyolefin, a rubber-like material, polyisobutylene or a mixture of two or more thereof.

6. A composite as claimed in any of claims 3 to 5, wherein the bonding layer or layers C comprise(s) a solid III, a plasticizer or a combination of two or more thereof.

7. A process for producing a composite as claimed in any of claims 1 to 6, which comprises joining the first layer or layers and the second layer or layers and, if present, the bonding layer or layers to one another by hot lamination.

8. A process for producing a composite as claimed in claim 1 or 2, which comprises subjecting the first layer or layers or the second layer or layers or the first layer or layers and the second layer or layers to a corona treatment and subsequently joining the first corona-treated layer or layers to the second corona-treated or untreated layer or layers.

9. A process for producing a composite as claimed in any of claims 3 to 6, which comprises applying at least one bonding layer to the first layer or layers, the second layer or layers or the first and the second layer or layers and subsequently joining the first layer or layers to the second layer or layers via the bonding layer or layers.

10. The use of a composite as claimed in any of claims 1 to 6 for producing an electrochemical cell, in a sensor, an electrochromic window, a display, a capacitor or an ion-conducting film.

11. An electrochemical cell comprising a composite as claimed in any of claims 1 to 6 or a combination of two or more thereof.

12. The use of the electrochemical cell as claimed in claim 11 as an automobile battery, instrument battery, planar battery or polymer battery.

Add B3

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